DESCRIPTION

Recoverable formwork device for frames.

The present invention, as the very title indicates, relates to a number of elements which allow formwork to be built up, of the recoverable type, specially suitable for frames or roofs, which comprises a number of support bolsters and drop bolsters, sustained by a wedge which allows the maintenance and descent of the support for dismantling thereof, both included in telescopic props which stand on the floor and which serve as means of support for a grid structure on which a number of boards or other planking elements are placed. This assembly as a whole constitutes a freestanding self-bearing structure, recoverable in its entirety, initially in all the planking and auxiliary material and half of the props, the system remaining with a number of props and a part of the structure placed in situ for a longer period until the total curing of the concrete is achieved.

The parent company of the applicant PERI Gmbh is holder of the European Patent 685022 relating to a roof formwork which is formed by means of support bolsters and drop bolsters which sustain a metallic structure, included in the European Patent 670944. Likewise in the European Patent 670945 a latch or device for inclusion of support and drop terminals in a telescopic mast is foreseen.

Based on this configuration of recoverable formwork for building frames of the parent company, a number of improvements have been introduced therein which are disclosed in the following application.

The grid structure has in this case a configuration in a longitudinal direction formed by beams, constituted by an upper straight structural element reinforced with another lower element connected to the previous one by miscellaneous intermediate props; at right-angles to the previous one the structure is defined by means of bracing struts formed only by a structural element of rectangular section. In both cases these structural elements have on the ends and on a lower plane an opening which allows them to hang initially from the support and drop bolsters which have for this purpose some projecting lugs arranged at 90°, in order to raise the opposite end during erection or to support it in the form-stripping preventing it from falling to the floor.

The support bolster, or a drop bolster placed in an intermediate area of a bracing strut, comprises a lower area which is inserted in the telescopic prop, provided with a safety pin and higher up a number of radial lugs which define some hooks on the upper end thereof for supporting the corresponding beams thereon. In contrast to the support bolster described in European Patent 685022, in this case in the top centre and forming an angle of 90° with said lugs, a longitudinal guide is located having a U-section and appropriate dimensions to hold a bracing strut inside; in the centre of this channel is a long projecting nipple which is introduced in holes implemented for this purpose on the lower face of the bracing strut or which determine the emplacement butt of the latter when two bracing struts coincide on a support bolster.

The drop bolster comprises on the under side an area which is introduced in the telescopic prop, likewise fitted with a safety pin and higher up it has two diametrically opposed lugs, welded to a plate, and at 90° to the previous ones, other two mounted on a sliding base, supported by an encircling wedge which on being withdrawn allows the descent of the same to commence the form-stripping.

The formwork disclosed herein is supplemented with a number of auxiliary pieces, noteworthy among which is a termination in form of a claw capable of being hooked on the underside of the beam, which has welded underneath a flat base and lower down has a projecting termination capable of being inserted in a telescopic post. Other auxiliary elements are spacers designed to define the points of positioning two consecutive beams when circumstances make the emplacement of a bracing strut impossible, or longitudinal purlins capable of resting on several telescopic props and securing thereon beams and/or bracing struts. Finally, other elements have been foreseen which constitute cantilever bolsters, capable of forming the ends of formwork, wherein as their name indicates, a cantilever exists with regard to the supporting surface.

The object of the present invention will be better understood with the assistance of the following description made on the basis of a practical example of embodiment; this description is made with the support of the attached drawings wherein:

Figure 1 shows a schematic view in elevation of formwork implemented according to the present invention.

Figure 2 shows in a side elevation with details one of the beams which constitutes a fundamental part of this formwork.

Figure 3 shows in individual top plan and side elevation drawings, one of the bracing struts which form part of this device.

Figures 4 and 5 show a support bolster and a drop bolster respectively in different views in elevation, plan and profile.

Finally, figure 6 shows an auxiliary element constituted by a support claw for one of the beams.

Making reference in the first place to figure 1, formwork is observed therein in schematic terms constituted by a number of support bolsters (1) and drop bolsters (2) which are secured in telescopic masts (5) resting on the floor, generally of the floor immediately below, and which constitute nodes of a grid which is formed lengthwise in one of the directions by means of beams (3), whilst at right angles it is defined by means of bracing struts (4). On top of this grid structure rest boards (6), of wood or synthetic materials, which form the base supporting the blocks and structure of the corresponding frame.

For the erection of this structure some support (1) and drop (2) bolsters have been foreseen, in general constituted by elements which have a lower termination able to be inserted in the telescopic post (5) and on top they have on at least one of their faces a number of lugs which will allow the introduction of the beams (3) or bracing struts (4).

The beams (3) have been represented in detail in figure 2 where their constitution is observed by means of structural elements formed by a straight upper metallic profile (31) which has underneath a second reinforcing profile (32) which is folded at the ends and is welded underneath being separated from the previous one by means of spaced partitions (33).

For their part the bracing struts (4) shown in detail in figure 3, have a body defined by a single profile of rectangular section which is provided on the under side with a number of holes (42) which will allow the placement at certain points of support and/or drop bolsters for supporting the structure in certain circumstances.

Both the beams (3) and the bracing struts (4) are provided on their heads with openings implemented in the lower face, marked with references (34) and (41) respectively, which allow their introduction from the floor supporting and being introduced in the lugs (33) or (34) of the bolsters (2) or (3) respectively and their elevation by the opposite end until it is secured in the bolster placed next.

In figure 4 a support bolster has been shown which includes a prolongation (21) on the underside which is introduced inside the telescopic prop (5) which supports it, this termination coming with a pin (22) which permits its immobilization inside said prop. Higher up it has two radial lugs (23) having a hook-like form (24) above which allows the supporting or inclusion in the interior thereof of the openings (34) or (41) of the beams (3) or of the bracing struts (4). Above these lugs (23) is a guide (25) of U-shaped configuration which has the appropriate dimensions for introducing in the interior thereof a bracing strut (4) fitting therein to form a uniform longitudinal line. In this guide (25) and in the centre a projecting nipple (26) is observed which will be inserted in the drill holes (42) present in the bracing struts (4) when this support bolster is located in intermediate points and when two bracing struts coincide on a support bolster, the point from which both elements run.

Figure 5 shows a drop bolster which has a similarity to the previous element as regards its lower termination (31) and pin (32) capable of being introduced in a telescopic prop (5). Starting from here and in the fixed structure of the drop bolster two diametrically opposed lugs (33) are observed and other two (34) mounted on a piece which is capable of sliding in the structure of the support, which has on the underside a wedge (35), which is capable of immobilizing this mobile part, in a such way that the lugs (34) are approximately at the height of those (33) in the operative position, and when the wedge is withdrawn they drop to the plate (36) so that the beams secured therein can be extracted and the form-stripping begin from the underside thereof.

Diverse accessory elements have also been designed for the finishing pieces of this type of formwork, some of them in relation with formwork to circumvent pillars or to start from a vertical wall already existing or other situations of diverse type. Among these accessories a claw is disclosed which has been shown in figure 6 and which has a lower termination (71) capable of being likewise inserted in a prop (5) above which there is a planar base (73) which determines the penetration in said prop and above a claw-shaped termination (72) capable of sustaining a beam (3) for the section (32) mounted below.

It is not considered necessary to extend this description further for an expert in the matter to comprehend the scope of the invention and the advantages which arise from the same.

The terms in which this specification has been expressed are to be taken always in the broadest sense and not restrictively.

The materials, form and arrangement of the elements shall be capable of variation provided it does not imply an alteration in the essential characteristics of the invention, which are claimed hereunder.

CLAIMS

1. Recoverable formwork device for frames, which comprises a number of support bolsters (1) and drop bolsters (2) sustained by a wedge (36) which allows the maintenance and descent of the support for the dismantling thereof, both included in respective telescopic props (5) which stand on the floor and serve as means of support for a grid structure on which are located boards or other planking elements (6), characterised in that said grid structure is formed by: a) beams (3) which comprise an upper straight and metallic structural element (31) which is reinforced with another structural element (32) parallel and underneath, which starts near the ends of the previous one and is connected to it by means of several intermediate props (33); b) bracing struts (4) formed by a single structural element, of rectangular section; it is likewise characterised in that both elements (3) and (4) have on the ends, in the lower plane, a lower opening (34)-(41) suitable for hanging these elements on one of the bolsters (1) and/or (2) while the opposite end is raised during erection or in form-stripping.

2. Device, according to the previous claim, in which the support bolster or the intermediate drop bolster comprises a lower area (21) which is introduced in the telescopic prop (5) provided with a safety pin (22) and higher up a number of radial lugs (23) which finish in upper hooks (24) for holding the beams, characterised in that in the centre and on top it has a U-shaped longitudinal guide (25) with dimensions appropriate for the bracing strut (4); it is likewise characterised in that in the centre of this channel (25) it has a long projecting nipple (26), in conformity with some holes present in the lower face of the bracing strut (4).

3. Device, according to the previous claims in which the drop bolster (3) comprises on the underside a lower area (31) which is introduced in the telescopic prop (5), provided with a safety pin (32), characterised in that on top it has two lugs (33), diametrically opposed and welded to a plate, as well as at right angles to the previous ones other two lugs (34) mounted on a sliding base, supported by a wedge (35) which on being withdrawn allows the descent of the same in order to begin form-stripping.

4. Device, according to the previous claims, characterised in that it likewise comprises an auxiliary piece (7) which has a claw-shaped termination

(72) capable of being hooked on the underside of the beam (3), which is welded to a planar base (73) and which underneath has means (71) for inserting a telescopic post.

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